1901MNRAS..61..388S

which give rise to the variable brilliancy of η *Argûs*, although, of course, this is only conjectural.

The correspondence with α *Cygni* furnishes an indication of the origin of these spectra. The spectrum of α *Cygni* differs from that of *Sirius* mainly in the strength of its lines. I have previously (*Comparative Spectra of Stars*, *Phil. Trans.*, vol. 191) attributed the characteristic lines of the Sirian stars to "calcium and titanium rather than to iron, although that spectrum is also present in an incipient form."

April 12, 1901.

Addendum.

Additional photographs of spectrum of *Nova Persei* :—

1901.	Mag.	Photographs	1901.	Mag.	Photograph
April 17	$5\frac{1}{4}$	nil	April 21	6	1
18	$4\frac{1}{4}$	2	22	6	nil
20	6	1	27	$4\frac{3}{4}$	1

April 28, 1901.

The Spectrum of Nova Persei. Note 2.

By Rev. W. Sidgreaves.

The bright hydrogen bands have preserved their general character of strength and breadth throughout the month of March and up to April 4, the date of the last photograph. At the beginning and end of March they were well marked by fine central reversals ; in the middle of March they were crossed by two, and in some cases three, lines of greater brightness ; and on April 4 $H\zeta$ showed a line of very pronounced maximum strength to the violet side of its wave-length centre.

The dark hydrogen lines showed their comparatively narrow width on March 7, when the bright bands had paled enough to unmask the red side margins of their dark companions. On March 12 the dark lines were well defined doubles, with the violet side components weaker. On the 21st and 22nd the weaker components were lost, and the series became one of very fine single lines. After the 22nd no sign of the dark series has appeared on the plates.

The relative displacement of the two series is very great ; and, apart from direct comparison with the hydrogen tube, it is possible to say, with great probability, that the source of the hydrogen bright bands is comparatively stationary, and that the source of the dark lines, if their displacements are to be

Downloaded from http://mnras.oxfordjournals.org/ at University of Hawaii - Manoa on June 24, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System

1901MNRAS..61..388S

attributed to motion, must be at a velocity far too great for any assignable physical cause. The measured lengths from Hβ to Hγ, to Hδ, to Hϵ, to Hζ, and to Hη centre to centres of the bright bands, guided by the reversals, are the same as the lengths measured on the spectra of comparison stars; and the measured lengths of the same intervals in the dark line series proceed with an increasing difference, showing a longer spectrum. These differences will be given in wave-length measure in a future full report of the observations of the new star; and they will probably be found to need velocity of the order 10^3 miles to account for them by motion in the line of sight.

Stonyhurst College Observatory:
1901 *April* 7.

The Spectrum of Nova Persei. Note 3.

By Rev. W. Sidgreaves.

Nova Persei as a Variable Star with a Variable Spectrum.

On March 22 it was first seen that there was a marked change in the spectrum when the star was very small, about equal to *l Persei.* A prominent bright yellow band appeared to rival Hα; and on the photograph one of the bright blue bands stood out boldly on the weak continuous spectrum as strong as Hβ, accompanied by three other weaker bands; and, thirdly, the bright Hζ band was extended on the violet side to double its usual width.

On March 25 and 28 the bright yellow band was the same, and the photographed spectrum was the same as on the 22nd; while the photographed spectrum of the 27th was of the same type as on the 21st and previous days: the blue bands were more masked by the stronger continuous spectrum, and Hζ was at its usual breadth. A reference to the journal of observations showed that the three dates, 22nd, 25th, 28th, were probably well marked minima of the star's light curve; and although there was only the one photograph of the spectrum on an intervening day, when the star was brighter, the yellow band had been observed through breaks in the clouds on the 24th and 26th, and was noted as not so prominent as on the three nights of minimum brightness. Since then no photograph has been obtained on a date of minimum magnitude, supposing the period to be three days; but a good photograph on April 4, when the star appeared very nearly equal to κ *Persei,* showed the same spectrum as on the 27th, and the yellow band was noted as weak.

There can be no doubt about the variations of the star's magnitude and of its continuous spectrum; these go together;

Downloaded from http://mnras.oxfordjournals.org/ at University of Hawaii - Manoa on June 24, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System